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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,206

08/02/2006

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EXAMINER

HOBAN, MATTHEW E

ART UNIT

PAPER NUMBER

1793

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,206	<b>Applicant(s)</b> SHIOI, KOUSUKE	
	<b>Examiner</b> Matthew E. Hoban	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 02 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/02/2006 9/14/2006 &amp; 5/24/2007</u> .                     | 6) <input type="checkbox"/> Other: _____                          |



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 5-7, 9-10 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kano et al in their publication entitled "A Red Phosphor of High Lumen Equivalent,  $Y_2W_3O_{12}:Eu^{3+}$ ".

Kano teaches and tests a red phosphor of the formula  $Y_2W_3O_{12}:Eu$ , where Eu is doped at 10%, giving the formula  $(Y_{1.8}, Eu_{.2})W_3O_{12}$ . The composition was obtained by firing a mixture of yttria, europium oxide, and tungsten oxide in a crucible at 1200 Celsius for 2 hours (See Experimental Section). This phosphor is a red phosphor as can be seen in Figure 5.

**Regarding Claim 1, 3, 5-7:** The phosphor falls under the formula of the instant claims,, where  $y=3$ ,  $x=1.8$ ,  $Ln=Y$  and  $M=W$ .

**Regarding Claim 9:** Kano's phosphor emits red light as can be seen in the emission spectra of Figure 5.

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**Regarding Claim 10:** Kano constructs a testing apparatus comprising a mercury light source, and the phosphor to test the emission of the phosphor ( See Column 2, Page 2296).

**Regarding Claim 12:** Kano states in his abstract that the red phosphors created are applicable to color picture tubes, which are all used in conjunction with screens to create the picture.

**Regarding Claim 13:** The phosphor of Kano is made by firing oxides of yttrium, europium and tungsten at 1200C for 2 hours as can be seen in column 2 of page 2296 at paragraph 2.

3. Claims 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Goutenoire in 7018566.

Goutenoire teaches a composition that falls within the bounds of the instant claims 2 and 4. The compositions of Goutenoire are based on  $\text{La}_2\text{Mo}_2\text{O}_9$ , where Lanthanum can be replaced partly by an element such as Europium (See Examples in Column 5 and column 2, 39-46). Goutenoire is silent as to the phosphoring capabilities of this composition, but nevertheless, the claims are directed to a composition. The preamble includes the fact that the composition is a phosphor, but this can be given no patentable weight since this implies no structural or other compositional limitations beyond those

that are claimed. Therefore, the composition of Goutenoire would also have phosphoring capabilities based on its composition. It is the same composition as that which is claimed so it must inherently have the same properties.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al in their publication entitled "A Red Phosphor of High Lumen Equivalent,  $Y_2W_3O_{12}:Eu^{3+}$ " as applied to claim 1 above, and further in view of Mueller in 6,686,691 or Baroky in 2004/0263074.

Kano teaches and tests a red phosphor of the formula  $Y_2W_3O_{12}:Eu$ , where Eu is doped at 10%, giving the formula  $(Y_{1.8}, Eu_{0.2})W_3O_{12}$ . The composition was obtained by firing a mixture of yttria, europium oxide, and tungsten oxide in a crucible at 1200 Celsius for 2 hours (See Experimental Section). This phosphor is a red phosphor as can be seen in Figure 5.

Kano does not teach the use of his phosphor in conjunction with a nitride based semiconductor emitter and further does not teach particle size.

However, both Mueller and Baroky teach the above mentioned deficiencies independently. Both Mueller and Baroky are directed towards white LED's, which include a red phosphor at least. Mueller for example uses CaS doped with Eu or Ce (See Column 4, Lines 10-36) and Baroky also uses alkali based Sulfides doped with

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europium as can be seen in paragraph 37. Both phosphors are also of small size, where Mueller uses phosphors smaller than about 15 microns (See column 6, lines 40-50) and Baroky uses phosphors less than about 10 microns (See chart between paragraph 44 and 45). It would have been obvious to replace the phosphor of Kano for either of these red phosphors based on the premise that Kano states that his phosphor is closer to the ideal red color than any other red phosphor currently known. Therefore, the purer color could give a better LED. The ability to create a better red LED would motivate one of ordinary skill to combine these disclosures and create the white LED of either Mueller or Baroky using the phosphor of Kano as the red phosphor. And thus the combination of these disclosures is clearly obvious

Mueller and Baroky also teach the use of a nitride based semiconductor emitter. If one were thus to combine the disclosures as stated above, this nitride based semiconductor would be included in the obvious combination of the two. In Mueller an (In, Ga) N diode is used (See Column 3, Lines 45-57), which emits at 480 nm, Mueller goes on to state that another source could be from a mercury plasma, which incidentally is the same source as used by Kano. Thus it would be obvious to use a nitride source in place of the mercury source used by Kano. Also, Baroky speaks of a gallium nitride source in paragraph 27. This substitution would also be obvious for the above stated reasons based on the knowledge that the mercury light and gallium nitride semiconductor emit roughly the same light and are thus would be obvious replacements for one another to



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one of ordinary skill since they are equivalent light sources in that they both emit blue light.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Hoban whose telephone number is (571) 270-3585. The examiner can normally be reached on Monday - Friday from 7:30 AM to 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/  
Supervisory Patent Examiner, Art Unit 1793

meh